The Builder.

SATURDAY, DECEMBER 18, 1852.

IT appears that we have unwittingly transgressed, by our report of the discussion on pipe drains and brick sewers at the Institution of Civil Engineers (see page 767, *ante*); the Council of the Institution objecting to the publication of any but "authorised" versions of what is said there, which are sent to a certain portion only of the press. We will not stop to consider now what is involved in this arrangement,—its expediency or otherwise,—nor would we willingly do anything that might be considered offensive by the Council of the Institution, for whom we entertain the greatest respect. The subject under discussion is one of such great and pressing interest at this moment, and we have received so many requests from various parts of the country to inform our readers of the opinions publicly expressed at the Institution, that we feel bound to communicate all we know about it, and feel certain that we shall be held excused by the Council, pending their reconsideration of the rule in question, if we complete our report of the proceedings. The more so, too, as we are assured that the majority of the speakers on the occasion, so far from wishing to disguise their opinions, are anxious that publicity should be given to them. We report to-day, and always, the discussion of such subjects brought before the Institute of Architects, (with the full concurrence of that distinguished body), as seem likely to interest or benefit the public, as other journals do in the case of other societies; and it seems difficult to find a good reason why what is said in the open meeting-room of the Institution of Civil Engineers should be viewed differently. There are indeed weighty reasons why speakers at such institutions should know that their observations *may* be reported. These, however, we pass by: we have not the slightest wish to be thought troublesome,—very far from it. Our only desire is to be useful at an important juncture. The time is gone by for mere generalities on the subject; nor will the public be satisfied in this particular matter with knowing only the inference drawn from the discussion by the officers of the society, ably as it may be done. They are looking for the actual opinions and experience of men whose reputation is known to them, and who, it may be supposed, are quite willing to assist those who are interested in the matter in arriving at a sound conclusion.

Without further preamble or apology, then, let us look to the resumption of the discussion on the 7th inst. when Mr. Rendel, the president, was in the chair, and the following remarks were, we believe, made:—

Mr. Toulmin Smith said,—in his opinion they had to consider the practical value of maxims and principles recently laid down by certain authorities in reference to house drainage. It had been laid down by Mr. Rawlinson, the reader of the paper, that it was unnecessary to construct a sewer large enough for a man to go up, unless required for the flow of sewage, &c.; also that sewers should not receive the suburban drainage. Upon these and other questions he was prepared to join issue; and being at present engaged superintending the drainage of some parishes in London, he had (though not an engineer) some practical information on the subject, which might entitle him to speak. Formerly the sewers were used exclusively to carry off the surface water: the system now advocated was to exclude the whole of such waters. This, he contended, would be an innovation, and erroneous. It was said Nature provided for the rain-fall, and also provided for its removal; but when man interfered with Nature's provisions, the removal should be otherwise provided for. At Highgate-hill he had, in a short length of sewer, provided nineteen gully-holes, to prevent flooding, which usually occurred after heavy rainfalls. This treatment, he stated, produced the desired effect. He said it was admitted by authorities, that the pipe system required perfection, not only in the pipes and material of which they are made, but also in the mode of laying. Perfection in all these points could not be attained, and therefore brick sewers were cheaper, as they provided for every contingency; and, if a stoppage occurred, a man could be sent up to examine and find out the cause. Every difficulty could be met by the brick sewers, without the increase of expense which must result from the other system. At Holloway a pipe drain had been laid down and removed. The health of a town population required that the subsoil should be well drained: this could not be done by impermeable pipes, but might be effected with brick sewers. Besides, the natural tendency of the pipes is to loosen and undermine their own foundations. He could not account for the public being led away without making inquiry on the subject.

Mr. Smith then proceeded to descant upon the General Board of Health, and the powers they exercise under the Act of Parliament, and asked whether engineers were to be regarded as clerks of works, under the authority of any bureaucratic body, but was reminded by

The Chairman that it was necessary to confine himself to the subject of drainage, which was the question before them.

Mr. Smith, in conclusion, said,—some time ago they were told that flushing was necessary. Now they were told the reverse. He thought that tubular drains might be useful for house drainage and short distances, but otherwise they should not be used. Engineers ought not to bow to any particular authority, but should listen to, and be guided by, science and practical experience.

Mr. P. Holland said they might as well try to convince Manchester men that calico was unfit for shirts, as to convince him that pipes were unfit for drainage. Admit a limit to the use of pipes: the question for their consideration was, whether the proper limit had been fixed in the paper before the Institution. He could not assent to the proposition that it is necessary to construct sewers larger than otherwise wanted, on purpose to allow men to enter them. The direction of the discussion appeared to be that brick sewers had no evils; but, in his opinion, they had all sorts of evils, which, if not obvious to sight, were at least so to the smell. It had been stated that the Richmond drainage was, to a great extent, a failure; but he could inform them that an inquiry had recently been made, 100 houses were taken indiscriminately, and the occupants of such were satisfied with the working of the drains.

Mr. G. Donaldson said the speaker referred to statements which had not been made by him.

Mr. Holland said that Mr. Donaldson had pointed to a drawing now on the walls before them, showing a pipe with a brick arch turned over it; and that, too, in such a manner, that the inference drawn from his observation could not be other than that this drawing represented the general system at Croydon; whereas the fact was, that out of seventeen miles of house and street drains, there had been but some 300 yards of failure, and this failure was readily accounted for. He did not consider the public had been led away without inquiry, and urged, as proof of the increasing public confidence (in the system of pipe drainage), the fact, that the manufacture of pipes, which a few years ago was very limited, had now become a branch of industry of national importance; so much so, that hundreds of miles of pipes were manufactured every year, and the demand is greatly on the increase.

In reference to a few observations by the chairman, Mr. Holland said he only wished to correct what had been stated as to the failure of pipes; and would conclude by one example showing the comparative cost of the two systems. At Rugby, the cost of the pipe drainage had been 3,600*l.* whereas if the usual sort and size of drains had been laid down, the cost would have been 15,000*l.* This statement he made on the authority of the engineer.

Mr. Bidder said it would have been more satisfactory had the engineer been present to give (personally) the result of his experience.

Mr. Plum said, in his opinion, the area of a town should be more perfectly underdrained than agricultural land; therefore, if pipes could be used with open joints, how much better to adopt that course than continue the use of close jointed glazed pipes. They ought to hesitate before acquiescing in the principle of mixing house drainage matters with the surface water drainage: they might as well put all dust and refuse of every kind down the drains as adopt such a system.

Mr. Lovick, in reference to the Kilburn failures (of pipes) said he considered it due to the late Mr. Frank Foster (who advised the adoption of those pipes) to state the cause of failure, namely, the improper removal of the timber shoring in a deep trench, which caused the sides of the trench to give way, so that the whole of the earth fell in and crushed the pipes.

The Chairman said, with reference to some desultory observations, that the discussion had certainly taken a very wide range, and it would be necessary to bring it back to the practical points which were really involved in the question. He hoped, therefore, that when the question was again brought before them, gentlemen would limit themselves to the results of their own practical experience on the subject.

When the subject was resumed on the 14th, the Chairman (Mr. Rendel) repeated this very proper advice, and said, though the question of the relative merit of the pipes made by different manufacturers was of importance (and a paper on the subject of the manufacture of pipes would, he was sure, be of great interest to the members), he begged that it might not be introduced that evening, as it was not relevant to the matter really before them.

Mr. May said, that the object of some of the schemes advocated by the Board of Health seemed to be the preservation of the sewage, for ultimate use; but he thought that in the drainage of any place, the object was to get the sewage removed as speedily as possible, and that the preservation of it was not in the first instance an important end to be gained. In some few places it (the sewage) might be applied with advantage; but they were only exceptions, and ought not to be adduced in support of a general system. He also alluded to the statements made in Mr. Rawlinson's paper as to the mortality at the Portland Prison, and contended that, if those statements were to be received for anything they would lead to the presumption that lives there would be extended to 150, 180, and even 200 years. That showed the caution with which such statements should be received.

Mr. Robert Stephenson said that, on such a question as this, honest facts fell with weight: but he regarded abstract principles and theoretical schemes as quite inapplicable in the drainage of towns. He had certainly seen much, and was therefore perhaps entitled to speak from experience on this matter. When he first joined the Sewers Commission he fancied that he understood the subject; but

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